ecoletter

SPRING 2011 ISSUE

WE'LL BE OK IF THIS

KEEPS HAPPENING

CHESAPEAKE

A Publication of the
Water and Waste Operators Association of
Maryland, Delaware, and the District of Columbia, and the
Chesapeake Water Environment Association

WWOA

PRESIDENT'S MESSAGE

CWEA President

—Craig Murray

Volunteer: To offer or choose to do something without being forced

As I reach the mid-point of my term as president (my how time flies), of all of the things I have realized about our great organization the one that stands out is the amount of time invested by dozens of dedicated members in order to keep the CWEA moving forward. So I want to start by thanking all of you who have given your time willingly in support of the CWEA. I would also like to thank all the great organizations that have made its employees, and often its money, available to the CWEA.

One special volunteer that I would like to recognize is Laurie Perkins. Laurie was a driving force behind many of the noteworthy accomplishments that the CWEA has seen over the past decade. From the growth of the collection system committee, to the rebirth of the operations challenge, to her role as MD trustee, to the numerous ad hoc committees she contributed to—no matter what Laurie took on she always delivered on time and with fantastic results. Laurie is a great example of the impact that one individual volunteer can have. While we are all saddened by her decision to move back to New England, we wish her the best and hope she and her family can crash the Tricon party one summer very soon.

Another group of volunteers that deserves recognition is the group that organizes and produces the *Ecoletter*. For over 30 years the *Ecoletter* has been a top-notch publication that we can all be proud of. That does not happen by accident. It takes a group people (volunteers) that solicit advertising, assemble technical content, and coordinate all the other logistics required to get the issues delivered. The *Ecoletter* leadership is in transition and we are looking for additional volunteers to help in any number of roles. If you have interest please reach out to any of the board members.

Our organization depends on volunteers. But the reality is that most of those volunteers who are already involved are at (or over) the amount of time they can realistically commit to the CWEA. So I encourage all of you to look at your schedules, see what time might be available, and then volunteer for a role on something meaningful to you. Even just a few hours a year can make a difference.

WWOA President

—Rose Marie Cline-Lowe

Each year the Main Body does a drawing for the Gerry Slattery Short Course scholarship program. This is coordinated by our Education Committee. The ballots are mailed out to our current members. The drawings are conducted at a sectional meeting.

The scholarship includes: training, room and board. The training will be held at Mt. Saint Mary's, Emmetsburg, MD. Dates are June 5th thru the 10th.

THE WINNERS ARE:

Eastern Shore Section

Joseph Ryan (alternates Paul Sichau and Henri Hall)

Central Section

Jeff McMilllan

Southern Section

Morgan O'Dell (alternate Richard Cella, Sr.)

Western Maryland Section

Darold Butler (alternate Kevin Quinn)

State Winners:

Maryland—Duwayne Potter (alternate Bill Shreve, Jr.)

Delaware—Kevin Miller (alternate Kristy McAndrew)

District of Columbia—Roscoe Belk (alternate Charles Nelson, Jr.)

At Large Winner:

Michael Dionisio (alternate Sam McDougal)

I'm proud to announce that by changing the boards meeting site, we are now going to offer ONE member from each section a $500 scholarship to attend the Tri-Conference held at the Roland E. Powell Convention Center. This will pay for full registration and 2 or 3 nights stay. It will be up to each section to hold these drawings.

Call for Award Nominations for 2011 have been sent out. Please take time to nominate a deserving operator.

The Association had 500 Math Manuals printed up for our operators to have on site for referential purpose on daily operations.

The email addresses for all WWOA board members are

Continued on page 24

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CALENDAR OF EVENTS
Spring–Summer 2011

CSAWWA-CWEA Spring Meeting and Water Reuse Seminar
May 12 from 8am - 4pm
Maritime Institute, Linthicum, Maryland

CWEA Collection Systems Committee Seminar
May 17 from 8am - 4:30pm
Maritime Institute, Linthicum, Maryland

62nd Short Courses
May 5–10
Mount St. Mary's University, Emmetsburg, Maryland

Tri-Association Conference
August 30 - September 2
Roland Powell Convention Center, Ocean City, Maryland

www.wwoa-cwea.org

TO ALL MEMBERS:

When completing membership renewals, make sure all information is correct and current. We use WMBA (WEF Membership By Access) for membership information. If there is an e-mail address, please include it.

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EDITOR'S CORNER

A St. Patrick's Day satellite photo showed the effect of heavy rains and snowmelt on Bay waters. Five days earlier, the flow at Conowingo Dam on the Susquehanna was .268 trillion gallons a day, the highest since Tropical Storm Ivan in September 2004. In the photo a dark, sediment laden, nitrogen and phosphorus rich, plume extended all the way to the Bay Bridge, and a lighter plume reached Point Lookout. The situation on the Potomac was similar with a dark plume going past the 301 bridge and sediment evident almost to where the river meets the Bay. It remains to be seen how this will effect water quality this year but there's no way around saying this surge of pollutants the Bay TMDL seeks to reduce, starts things off on the wrong foot.

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Speaking of the Bay TMDL, a Virginia lawmaker introduced a bill to stop EPA from implementing TMDL regulations. Representative Robert Goodlatte of Roanoke said the TMDL was too costly, based on poor science and hindered agriculture and the economy in general. The House agreed with him and passed the bill (The Senate did kill this bill). What happens next is a good question but this action is an indication of the difficult times ahead for the Bay effort. Virginia cutting out $108 million from its budget for wastewater treatment upgrades won't help either. This is a mere pittance when compared to the idea to eliminate EPA coming from a former Speaker of the House and current presidential aspirant. He's not alone; there are plenty of others who consider better protection of the environment a hindrance to progress. Why they seem to want to return to the ~~good~~ bad old days.

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Unfortunately evidence abounds on a growing assault on environmental protection. In these pages we've reported on Marcellus Shale drilling, especially in Pennsylvania. The new head of the Pennsylvania Department of Environmental Protection has ordered inspectors on gas drilling sites to not issue any notice of violations without his approval. Seems the drillers complained about being taken to task. Just imagine when that inspector comes to your plant and you know they can't cite you for anything. Why you could get away with anything. Great fun, huh? Who knows, maybe we can get rid of NPDES permits and really have fun. Don't laugh; a bill was introduced in the Pennsylvania Senate to remove requirements for gas drillers to obtain stormwater permits. Down in Virginia, the President of the Virginia Poultry Federation wrote a letter to the Staunton News Leader about something they published that recounted the impact of agriculture on the Bay. Touting the money spent on environmental improvements, he went on to say poultry can be taken off the list of polluters and is making a positive difference in the restoration of the Bay. We don't debate that the poultry industry does a much better job of dealing with environmental impacts of its operations than it did before, but to say that upwards of one billion chickens and turkeys in the watershed plays a positive role in Bay water quality can only be called emboldened arrogance.

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Given the difficult economic times we should not be surprised at the resistance to The Bay TMDL. There's no question its ramifications will be far reaching and will affect how many things have been done. And it's understandable that funds are cut back in the short term, but to use these times to make long term, restrictions on implementing the goals of the TMDL would be a return to the bad old days of polluting. The Bay did not get into the condition it's in now quickly and if we've learned anything in the last 30 years it's not going to become better quickly either. Maryland and Virginia are the only states that have a vested interest in The Bay. All the other states will only do their part if they are made to and EPA is the only entity that can make them. And what other entity thinks long term and whose mission is outside the business cycle? But if you think about it, and we hope our readers don't have to be reminded, environmental protection creates homegrown business and jobs. And it makes our country a better, healthier place to live.

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Back in 1970, 20 million people gathered throughout the country, in what some say was the largest protest in our country's history. It was the first Earth Day. These people said enough was enough and things had to change. And they did. In short order, EPA was created, landmark laws creating the Clean Water Act, the Safe Drinking Water Act and the Clean Air Act were passed. Since those days our waters and air improved, even as our population increased by over 100 million people. We hope that progress can continue and not go backwards. Most of all we hope the lawmakers do not paraphrase what was said to one of our editors years ago on a construction site. When told he had to put rollover protection on his bulldozer he used on a steep slope, the bulldozer operator said "Safety (insert the words "environmental protection") takes all the profit out of construction (insert the word "business")."

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Last year on the 40th anniversary of Earth Day, the Deepwater Horizon drilling rig collapsed and sank into the Gulf of Mexico, 36 hours after exploding and catching fire. Three months later the well was finally capped and the spill stopped. The official estimate of this largest US spill is 205,800,000 gallons, making it an order of magnitude greater than the previous largest US spill, the Exxon Valdez in 1989.

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We hope you had a happy 41st Earth Day.

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Continued on page 10

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Continued from page 9

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Energy and Water 2011

Efficiency, Generation, Management, and Climate Impacts

Conference: July 31–August 3 | Exhibition: August 1–2
Hyatt Regency McCormick Place | Chicago, Illinois, USA

On the surface, energy and water may seem to be separate entities, but are actually deeply connected. Sustainable management of either resource demands consideration of the other. The Water Environment Federation and its cooperating partners, serving both the energy and water sectors, are pleased to announce a conference that provides insight into all facets of these overlapping issues. Sessions are composed of interactions with cutting-edge technology entrepreneurs, electric utilities' views on future water demands, the U.S. EPA's Climate Ready Utility Program, the latest research on energy recovery from wastewater plants, state of the industry for biofuels from algae and biosolids, and much more.

What to Look Forward to at Energy and Water 2011

- Opening General Session highlighting Integrated Resource Management (IRM)
- Workshop A: The Water, Energy, Air, Soil, and Transportation Nexus
- Workshop B: Pathways to Accelerating an Efficient and Low Carbon Water Future
- Workshop C: Greenhouse Gas Inventorying and Management for Wastewater Treatment: A How-To Guide with Industry Experts
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Registration Opens April 15!

www.wef.org/Energy

Advancing Water-Sector Technology

—By George Hawkins, General Manager of the District of Columbia Water and Sewer Authority

Situated at the southernmost tip of Washington, D.C., on the Potomac River, the District of Columbia Water and Sewer Authority's (DC Water) Blue Plains plant is the world's largest tertiary treatment facility. Within three years the 370-mgd facility will be renowned for another reason as well—as the first operation in North America to use thermal hydrolysis to pretreat sludge for anaerobic digestion and the largest such plant in the world.

Between 2000 and 2010, energy costs at DC Water's 370-mgd Blue Plains Advanced Wastewater Treatment Plant increased by 48%. This is primarily due to the deregulation of the energy market in the mid-2000s and increases in the unit price of oil. Photo: District of Columbia Water and Sewer Authority

The move dovetails with an agency wide energy audit that was completed in as part of DC Water's overall effort to voluntarily reduce its carbon footprint.

Built in 1938 and expanded and modified several times over the years, Blue Plains now serves 1.1 million residential and commercial customers on a retail basis and processes wastewater on a wholesale basis for suburban jurisdictions in Maryland and Virginia.

Over the last decade, we've invested almost $1 billion improving processes to meet nitrogen and phosphorous mandates related to Chesapeake Bay water quality improvements, as well as improving plant automation to streamline operation. The advanced degree of wastewater treatment we have at Blue Plains requires significant power usage, about 32 to 35 megawatts (MW), making Blue Plains the largest power consumer within the District.

ONLY 300 PROJECTS TO GO

Audit identifies hundreds of money-saving opportunities.

After establishing a sustainable energy policy in 2008, the District of Columbia Water and Sewer Authority (DC Water) retained engineering firm MWH to evaluate consumption operation wide and lay the groundwork for implementing conservation measures.

For one year, from December 2009 through December 2010, MWH consultants interviewed utility employees at all levels and conducted prioritization workshops with key staff members. They collected and analyzed operational data on pumps; electric, heating and air conditioning, and lighting systems; and water systems, including items like overall treated volume and opportunities to reduce water consumption. They evaluated water use by the authority. They considered renewable energy options.

The firm identified 250 projects—upgrading to more efficient lighting, HVAC improvements, building envelope improvements, and resetting or installing automated controls—managers can implement immediately to save a total of more than $500,000 annually. DC Water would recover the costs of these low and no-cost measures over a period of 12 to 18 months based on the total amount saved.

For example, the utility uses more than 1 megawatt of electricity annually to illuminate facilities. Converting to LED fixtures and installing motion sensors could save $100,000.

The firm identified 40 more capital-intensive projects that could save more than $3 million annually—the top-tier projects will save an annual $2 million. If implemented, the utility would recover the costs invested to achieve these improvements over a period of 12 to 18 months. They include:

- Replacing standard motors with premium models. The former are up to 10% less efficient and usually less powerful than premium efficiency motors that have been designed to be highly efficient as determined by the National Electrical Manufacturers Association, consume less energy, and decrease carbon emissions. This can result in efficiency gains up to 30%.
- Replacing the air-cooled chiller condenser with a water-cooled version. In addition to "recycling" treated effluent before discharge by using it for cooling, the process enhances efficiency by stabilizing condenser temperatures.
- Install a solar photovoltaic array. The utility has enough roof and land availability to generate 500 kilowatts, enough to power about 500 houses in its service area.

For many years the plant has processed its sludge with lime to produce a Class B fertilizer material that's given to farmers, foresters, and mine reclamation projects. Rather than destroying solids, the lime stabilization process increases volume because calcium oxide is added to the sludge to stabilize it. About 65 truckloads of biosolids leave the plant every day. Although this program has been a major success over the years, the large biosolids production volume must be trucked to fields and locations at long distances (often more than 100 miles away), resulting in high operating costs and high truck fuel usage, which elevates carbon emissions associated with plant operation.

DC Water recognized the need for a better biosolids processing system nearly a decade ago. After evaluating a large variety of options at that time, the authority selected anaerobic digestion because it is well proven, destroys half of the sludge, and creates a major energy product (methane gas) that has great value. In developing our plans further in recent years, we recognized that we needed to produce a biosolids product that was Class A (pathogen-free) and that had maximum flexibility for multiple reuse markets. And, we needed a digestion process that could fit within our very small available footprint. We had tracked the development of the thermal

hydrolysis process for many years, but in 2006 we began a more concerted effort to confirm the process could be of major value for DC Water.

Saving money while making money

Space is an ever-increasing challenge at Blue Plains. We have a 6-acre plot within the plant that can be used to accommodate new biosolids processing, but the rest of the 153-acre facility is already spoken for with projects that include enhanced nitrogen removal and a long-term control plan to reduce combined sewer overflows.

Because thermal hydrolysis of sludge is a new process that has not yet been implemented in North America, DC Water conducted thorough evaluations that included several years of pilot testing with our material. We also investigated many of the 20 operating plants overseas, and confirmed successful operation with process operators and owners. By 2009, we completed our due-diligence and assessment work

The Blue Plains Advanced Wastewater Treatment Plant is the only major point source of water pollution in the District of Columbia. DC Water is the only jurisdiction in the Chesapeake Bay watershed to reach and exceed its 2010 cleanup goals and is on track to meet the next level of performance by 2015. Discharge limits are 8.4 million pounds of nitrogen annually and a 12-month rolling average of 0.18 milligram/liter for phosphorus. In 2015, the nitrogen limit will drop to approximately 4.4 million pounds annually and phosphorous would be limited to 248,353 pounds/ year. Blue Plains is already meeting the phosphorous requirements. Photo: District of Columbia Water and Sewer Authority

and were ready to proceed with detailed planning, design, and implementation. We found that the thermal hydrolysis process developed by Cambi has by far the most experience, especially with large plants such as Blue Plains.

Thermal hydrolysis greatly improves the efficiency of anaerobic digestion by feeding digesters at many thicker solids concentrations, thus cutting the tankage requirements in half. This is a huge benefit for Blue Plains, which has such limited space. The process also produces exceptional quality Class A material that has low odor levels largely because of a higher degree of stabilization. Also, with thermal hydrolysis, digestion produces more methane gas, thus allowing even more power to be produced.

Thermal hydrolysis uses heat (320° F) and pressure of about 100 psi to kill bacteria and other organisms, including pathogens. This makes the solids more readily degradable within anaerobic digestion. The thermal hydrolysis "cooking" process takes place in vessels where the temperature and pressure are raised by adding steam. The temperature of the sludge is then reduced to that required for stable anaerobic digestion (about 100° F).

Next, the methane gas produced during digestion will be burned in combustion gas turbines that are connected to power generators. The hot turbine exhaust gas is used to produce medium-pressure steam (about 175 psi) that is used in the thermal hydrolysis cooking process.

Using thermal hydrolysis and anaerobic digestion for biosolids will generate approximately 13 MW of electricity, saving about $10 million/year on plant energy costs. The process also offers a reliable source of backup power for critical plant processes during commercial power outages.

Another major benefit of the thermal hydrolysis pretreatment process is that final dewatering of the biosolids produces a high-solids-content cake material (about 30%

The 1,250 tons of biosolids DC Water currently produces each day are trucked to Virginia and other nearby states, where the Class B biosolids are applied to agricultural and nonagricultural lands for soil conditioning and fertilizer value. Photo: Ted Coyle

solids). Additionally, the dewatering can be accomplished with low-energy machines such as belt filter presses. With the high organic destruction of solids during digestion, coupled with the improved dewatering, the daily volume of final biosolids product will be cut dramatically at Blue Plains, saving another $10 million/year in trucking and related costs for handling the biosolids.

Starting in 2014, we will realize these savings from trucking less product, as well as savings from reduced plant power purchases.

Program implementation will involve several construction projects from 2011 to 2014. The biggest project is a design-build procurement for the Main Process Train, which includes the thermal hydrolysis and digestion facilities. An extensive system of performance guarantees and start-up activities will help ensure smooth commissioning of the new facilities and allow transition from the existing Class B process to the new approach.

2011 Annual Water and Wastewater Industry Student Career Fair

—By: Dave Smith and Janine Yieh

The 2011 Annual CSAWWA / CWEA Water and Wastewater Industry Student Career Fair was held jointly by the Student Activities Committees of CSAWWA and CWEA on February 18, 2011 at the Dalecarlia Water Treatment Plant in Washington, DC. The Career Fair hosted eleven employers, and nearly 30 graduate and undergraduate students from local universities that included University of Maryland, Johns Hopkins University, Virginia Tech, and others.

Each year the Career Fair provides an opportunity for students with an interest in the water and wastewater field to participate in 20 minute, one-on-one, interviews with local consulting firms and municipalities/agencies in the industry. Additional activities at the Fair included a morning and afternoon tour of the Dalecarlia Water Treatment Plant given by Patty Gamby (Deputy General Manager of the Plant); an address from the Plant's General Manager, Tom Jacobus, to students and Young Professionals on career development; and a lunchtime presentation on Engineers Without Borders given by Teresa DiGenova of Black and Veatch.

The day concluded with a technical presentation given by John Helwig of Hazen and Sawyer on his involvement with upgrades to the Hershey Water Treatment Plant, followed by a Networking Happy Hour sponsored by the CSAWWA and CWEA Young Professionals Committees at Garrett's Railroad Tavern in Georgetown. Nearly 20 Young Professionals attended the afternoon plant tour, presentation, and Happy Hour.

The Annual Water and Wastewater Industry Student Career Fair is jointly sponsored by CSAWWA and CWEA. For more information or interest in future participation, please contact Dave Smith (dsmith@rkk.com) or Janine Yieh (jyieh@eaest.com).

Volunteer Meredith Welle (PBS&J) at the registration and sign-in desk.

Students lining up to sign-in for the Fair.

John Helwig giving a technical presentation on water treatment plant upgrades.

Teresa DiGenova speaking to students about Engineers Without Borders.

Tom Jacobus of Dalecarlia WTP giving an address on career development.

Networking Happy Hour at Garrett's Railroad Tavern in Georgetown.

Patty Gamby giving young professionals and students a tour of the Dalecarlia WTP.

Plant Profile: Freedom District WWTP

—By Chip Wood, P.E., Ecoletter *Staff*

Situated within the boundaries of Patapsco State Park, Freedom District Wastewater Treatment Plant (FDWWTP) is located about ten miles north of I-70 near the southeast corner of the city of Sykesville in Carroll County. The plant's service area, known as the South Branch Patapsco Watershed, includes the communities of Sykesville and Eldersburg. The collection system serving the plant includes about a dozen pumping stations and 100 miles of pipelines. Maryland Environmental Service, an independent state agency, is responsible for operation and maintenance of the treatment plant but not the sewage collection system. The first plant at this site went into operation in 1975.

The total population currently served by the plant is about 19,000 people. Design capacity of the plant is 3.5 mgd and Average Daily Flows are 2.5 mgd. Since 1993, the plant has employed a Biological Nutrient Removal (BNR) process and a chemical phosphorus removal process to meet the NPDES permit requirements.

NPDES summer effluent performance, in mg/l, is typically:

	Requirements	Performance
BOD	**15**	**8**
TSS	**30**	**8**
Total NH3	**1**	**<1**
Total P	**2**	**<1**

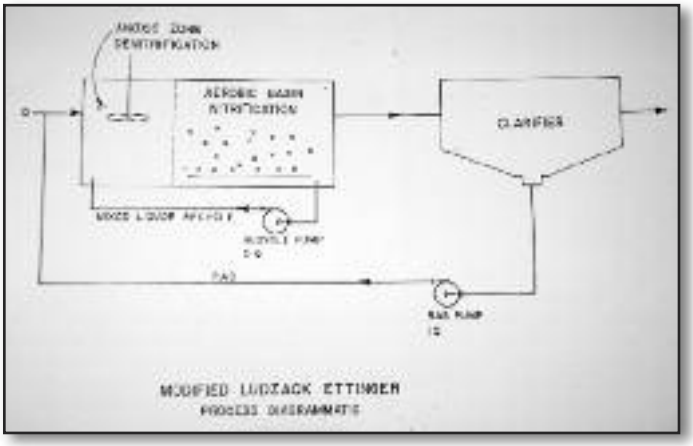
Remarkably, the plant has not incurred any NPDES violations in the last ten years or so. The current NPDES permit requires the plant to be upgraded to an Enhanced Nutrient Removal (ENR) process and calls for starting design in August 2011, starting construction in March 2013, and completing construction March of 2015.

Cyclone Grit Removal

Circular Primary Clarifier Surrounded by Annular Equalization Tank

Although most of the plant consists of dual-train liquid process steps, for purposes of simplification, this article is written as if there is only one process train in operation.

Raw influent flow to the FDWWTP first goes thru a rotating bar screen followed by cyclone grit removal and then goes on to a primary clarifier. Screening and grit waste is deposited into a dumpster then trucked out of the plant. Primary sludge is sent to a storage tank and later mixed with secondary sludge. Primary clarified effluent flows on to an equalization tank where it can be aerated if necessary and then is pumped to a secondary activated sludge process known as a Modified Ludzack-Ettinger (MLE) biological process. Variable speed pumps are employed to pump equalization effluent to the MLE in such a way that the flow to the MLE and the downstream liquid process units is essentially at a constant flow rate.



Modified Ludzack-Ettinger Process Diagram

The MLE process employs two stages placed in series to provide for two biological actions that reduce the biochemical oxygen demand (BOD), suspended

Anoxic Zone

Aeration Zone

solids (SS), and total nitrogen (TN) concentrations required to satisfy the plant's NPDES discharge requirements. The first MLE stage consists of an anoxic zone and is followed by a second MLE stage consisting of an aerobic zone. The anoxic zone tank is divided into six chambers and is partitioned to ensure plug flow. Retention time at 3.5 mgd is about 2 hours. The aerobic zone tank is also partitioned to ensure plug flow and provides tapered fine bubble aeration using three zones. Retention time at 3.5 mgd is about 6 hours.

Influent flow to the anoxic zone consists a combination of three streams: primary clarified effluent; recycled mixed liquor pumped from the aeration zone; and return activated sludge (RAS) pumped from the secondary clarifier. Effluent from the anoxic zone consists of one stream that flows to the aerobic zone. Mixed liquor effluent from the aerobic zone consists of two streams: one stream is recycled to influent of the anoxic zone and the second stream flows on to the secondary clarifier. Sludge removed by secondary clarification is either pumped as (RAS) to the influent of the anoxic zone or sent to the sludge storage tank as waste activated sludge (WAS). At the storage tank, the secondary sludge (WAS) is mixed with primary sludge.

Nitrogen removal from the plant influent actually begins in the aerobic zone, which is situated downstream from the anoxic zone. In the aerobic zone, nitrifying bacteria convert the ammonia (NH3) and ammonium ion (NH4+) to nitrate (NO3) in a process called nitrification. Later, when the nitrate is recycled from the aerobic zone to the anoxic zone, the nitrate is converted to nitrogen gas in a process called denitrification. The resulting nitrogen gas (N2) is then released to the atmosphere. The denitrification process requires a carbon source which is provided by the primary clarifier effluent that flows to the anoxic zone. A mechanical mixer in the anoxic zone mixes the three influent streams in a liquid environment where the dissolved oxygen content is near zero. Denitrifying bacteria present in the RAS utilize the nitrates (NO3) from the aeration stage recycle-flow as their source of oxygen and utilize the carbon in the primary effluent for an energy source. Unlike many configurations of denitrification processes used at other plants, the MLE does not require any supplemental sources of carbon, such as methanol or sugar water.

Secondary Clarifier with Administration Building in Background

Phosphorus removal utilizes a chemical process. Liquid alum is added to the influent stream to the secondary clarifier. The phosphorus precipitates out and settles to the bottom of the clarifier where it becomes mixed with the secondary sludge.

Effluent from the secondary clarifier flows on to continuous up-flow filters employing granular sand

Continued on page 24

Aerated Sludge Storage with two Thickener Buildings in Background

Plant Profile

Continued from page 23

Belt Filter Press

media. The intent of the final filtering process is for further removal of particulate fractions of BOD, solids, nitrogen, and phosphorus, all of which could interfere with the subsequent ultraviolet disinfection process. Solids removed by the filter are recycled to mix with the influent flow to the primary clarifier. Filter effluent flows on to ultraviolet disinfection followed by cascade aeration and final effluent discharge to the South Branch Patapsco River.

Sludge produced by the primary and secondary clarifiers is sent to sludge storage where it undergoes aeration and mixing as necessary. Effluent from the storage is sent on to gravity thickening and then on to belt filter pressing for dewatering. After dewatering, from 4% solids to about 18% solids, the sludge cake is sent to a plow blender where it is mixed with lime to raise the pH to 12. After 24 hours, the sludge is considered stabilized and is trucked to be applied to farm lands in Virginia.

Limed Dewatered Sludge Conveyor to Sludge Stockpile Process

Sludge Stock Pile Area

Plant maintenance is planned and tracked with a log book. Plant personnel perform minor maintenance tasks where as major maintenance is performed by a MES traveling crew.

Assistant Regional Supervisor, Dave Coal, assisted the author with preparation of this article.

WWOA President Message

Continued from page 3

listed on the web site for any operator to contact us on any suggestions or concerns.

Editors Note: This listing of scholarship winners is a good reminder of one of the benefits of being a WWOA member—free education. In these tight economic times it is a breath of free air to see this kind of worthy giving by an organization. A hearty thank you is in order.

WEF and AWWA Talk Water on Capitol Hill

—Originally posted on the WEF Blog by Scott Cummings, CH2M HILL

What an exciting time to be on Capitol Hill—with the cherry blossoms blooming and the government narrowing escaping the first shutdown in 15 years, there is a buzz here in Washington. With much of this buzz is focusing on budget issues, what better time to be discussing the significant return on investment that comes from funding for water infrastructure projects. This is one of the issues covered in the over 400 visits made to the offices of members of Congress over the last two days by the 160-plus attendees of the first WEF/AWWA joint Washington Fly-in Event—and note this event coincided with the New England Water Environment Association's (NEWEA) Congressional Visit and Legislative Breakfast, which brought out over 60 members alone to the event. Other issues discussed with Congress members and staff included chemical security, improvement to the Clean Water Act, and alternative frameworks for water infrastructure financing.

Being a new-comer to this event, it was interesting to see how the mechanisms of legislation work and the importance of establishing relationships between the water quality professionals we represent and our congressional delegation. Our contingent from Alabama met a full range of Congressional staff—from senior Senators to junior staff on their first day of work! Thankfully, the assistance we received from WEF/AWWA staff prepared us when navigating these meetings regardless of who was on the other side of the table. We received background information on the topics we to cover with Congressional members and staff, received pertinent regulatory updates concerning Safe Drinking and Clean Water issues, and even saw a short play starring the executive directors for both organizations illustrating how the office visits were to be conducted.

The event ran smoothly, especially considering it was the maiden voyage as a joint WEF/AWWA event. I expect that the event will not only continue long into the future, but will also grow to become the event that Congress members and staff look to for information and input on policy and legislative issues affecting the water sector.

The following is an issue paper presented by Fly-In delegates to members of Congress, requesting more accessible financing options for water utilities.

A WATER INFRASTRUCTURE FINANCING INNOVATION AUTHORITY (WIFIA) AND OTHER INFRASTRUCTURE FINANCING TOOLS

Action Requested:

- Support creation of a new water infrastructure support mechanism (WIFIA) to provide low-cost capital to water utilities needing to invest in infrastructure, and to State Revolving Funds.
- Support reform and capitalization of state revolving loan fund programs for drinking water and wastewater.
- Remove water projects from the state volume cap on Private Activity Bonds.

Background: High-quality drinking water and wastewater systems are essential to public health, business, and quality of life in the United States. The American Water Works Association (AWWA), Water Environment Federation (WEF) and others have documented that our water and wastewater infrastructure is aging and that many communities must begin to increase their levels of investment in the repair and rehabilitation of water infrastructure in order to protect public health and safety and to maintain environmental standards.

AWWA and WEF have long believed that Americans are best served by water systems that are self sustaining through rates and other local charges. However, we recognize that at present, some communities need assistance due to hardship or special economic circumstances. According to the US Conference of Mayors, in 2004-2005 Americans invested $84 billion in water and wastewater infrastructure, of which more than 95 percent represented state and local funds without subsidies or federal assistance.

The primary federal role in water infrastructure is one of leadership. Among other things, that role includes demonstrating and encouraging:

- Utility use of modern asset management tools and full-cost pricing;
- Use of rate structures that accommodate low and fixed-income customers as much as practical;
- Adoption of green technologies and approaches such as water and energy conservation, water reuse, and non-traditional stormwater management;
- Use of cost-saving watershed and regional strate-

gies, such as system consolidation, regional management, and cooperative approaches among water, wastewater, and highway agencies within a region; and

- Use of advanced procurement and project delivery methods.

However, there is also an important role for the federal government in lowering the cost of capital for water and wastewater investments. Almost 70 percent of American communities use bonds to finance local infrastructure. They pay billions of dollars in interest costs each year. Lowering the cost of borrowing for water and wastewater infrastructure is an important way to leverage local funding and help America rebuild and rehabilitate our aging water infrastructure.

A Novel Approach: The Water Infrastructure Finance Innovation Authority

To lower the cost of infrastructure investments and to increase the availability of lower-cost capital, AWWA urges Congress to create a "Water Infrastructure Finance Innovations Authority" (WIFIA), modeled after the successful Transportation Infrastructure Finance and Innovations Authority (commonly called TIFIA). Such a mechanism could lower the cost of capital for water utilities while having no or little effect on the federal budget deficit. WIFIA would access funds from the U.S. Treasury at Treasury rates and use those funds to support loans and other credit mechanisms for water projects. Such loans would be repaid to the Authority—and thence to the Treasury—with interest.

The Water Infrastructure Finance Innovations Authority would:

- Offer loans, loan guarantees, and other credit support for large water infrastructure projects and those with national or regional importance. These projects often find it difficult or impossible to access SRF loans, due in part to inadequate capitalization of the SRFs.
- Reduce the cost of leveraging for State Revolving Fund (SRF) programs by lending to them directly. A federal Water Infrastructure Bank could lend to those State Revolving Funds wishing to leverage their capitalization grants at the lowest possible interest rates. This would allow SRFs to make more loans and would increase their ability to offer special assistance to hardship communities if they chose to do so. Currently, 27 states leverage their SRF programs on the bond markets. WIFIA loans to an SRF would offer another mechanism to accomplish the same goal and make such a practice more attractive to additional states.
- Ensure a streamlined approach to financing. WIFIA should enable projects and state SRFs to obtain financing with no more burden than going to traditional credit markets through a streamlined review and application process.

Fitch Ratings, a top credit rating agency, calculates that the historical default rate on water bonds is 0.04 percent. Indeed, water service providers are among the most fiscally responsible borrowers in the United States. Moreover, those states that leverage their SRF programs all have AAA or AA bond ratings and no history of defaults, placing them among the strongest credits in the country. Consequently, **WIFIA**—because it involves loans that are repaid—involves minimal risks and minimal long-term costs to the federal government.

The SRF Program

It is also important for the federal government to continue to directly capitalize state revolving funds, which can be used to both broadly lower the costs of water infrastructure investment and to address the needs of communities in hardship or special circumstances. AWWA proposes several enhancements to the State Revolving Fund programs to allow them to better serve our communities:

- Continue support for SRF capitalization. Despite growing needs and the implementation of new drinking water regulations, overall federal investment in the SRF programs has decreased in recent years. AWWA asks that Congress carefully consider the broad and important economic and public health benefits that flow from each dollar of support for the State Revolving Fund programs.
- Provide states with flexibility in using SRF funds. This should include the ability to address the special needs of hardship communities they identify. This flexibility should also include the ability to use state procurement processes and standards that minimize process and administrative "burdens" for grant recipients and for states themselves.
- Eliminate arbitrage restrictions. Allow SRF programs that issue bonds to keep arbitrage earnings on their invested funds to the extent such earnings are used to support additional investment in water infrastructure. Based on historical market rates, this would provide $200-400 million per year in additional funds for water and wastewater investment.
- Streamline the SRF application. Provide incentives to streamline the SRF loan review process. It can take almost a year to obtain an SRF loan. This deters many communities from using the SRF, and leads them to issue higher-cost municipal bonds instead. Due to the revolving nature of the Fund, increasing the pace of awards through streamlining will help increase the revolving flow of funds, allowing even more projects to get built, and so on into the future.

America does not face a water infrastructure crisis at the present, but action is needed now to avert more serious problems in the years to come. The tenets outlined in this paper provide a path towards truly sustainable water infrastructure for all Americans.

WWOA/CWEA ECOLETTER
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